FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

March 20 to March 26, 2016 (Week 12)

Overall Summary

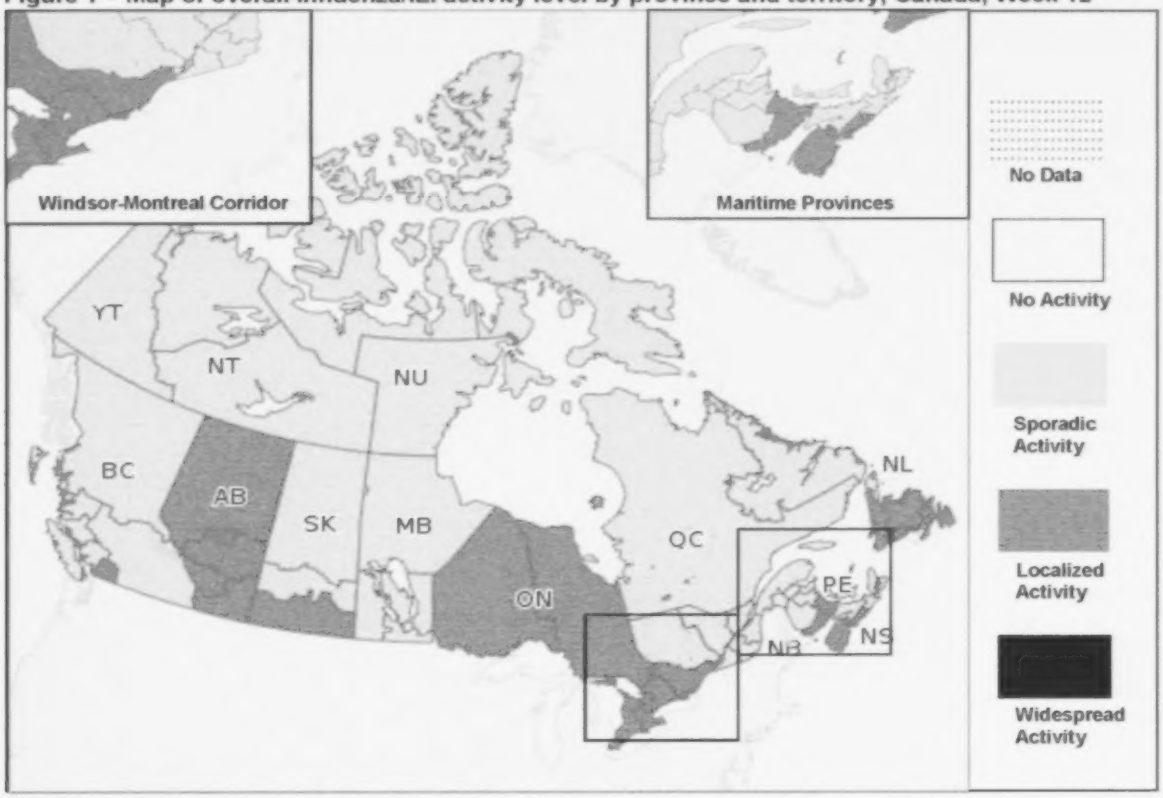
- For the second consecutive week, influenza activity continued to decrease across Canada.
- All regions of Canada reported sporadic or localized influenza activity.
- The number of positive influenza B tests reported continues to increase, but still accounted for only 30% of positive influenza tests in week 12
- Adults greater than 65 years of age accounted for the majority of hospitalizations in week 12 and account for the largest proportion of hospitalizations to date this season.
- Hospitalizations, ICU admissions and deaths among the pediatric population, while declining, remain above expected levels based on the past several influenza seasons.
- For more information on the flu, see our Flu(influenza) web page.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2015-16 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 12, influenza activity was present in all regions of Canada. A total of 21 regions reported localized activity levels across the country. Sporadic influenza/ILI activity was reported in 32 regions across Canada.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 12

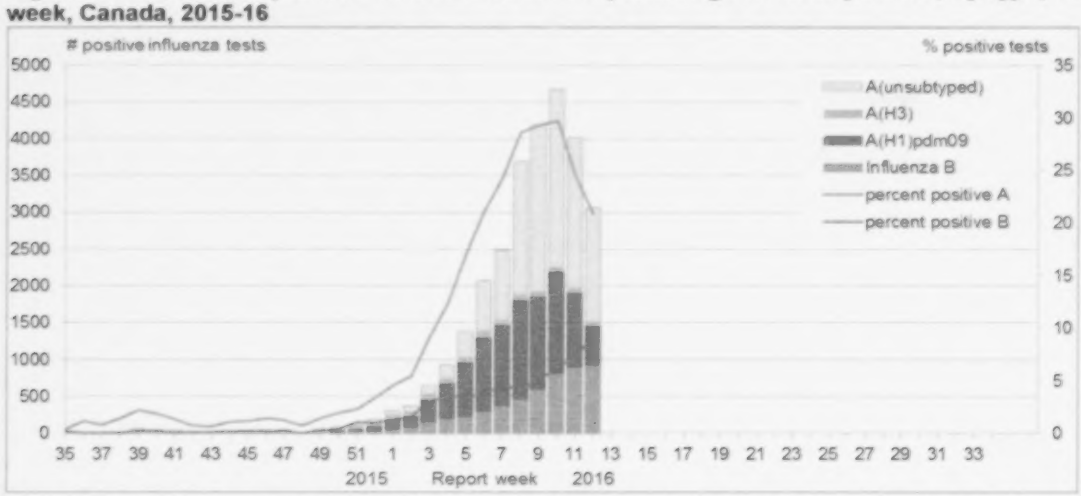


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

In week 12, the percent positive for influenza continued to decrease from the previous week [from 31% in week 11 to 30% in week 12 (Figure 2)]. Compared to the previous five seasons, the percent positive (30%) reported in week 12 was above the five year average for that week and exceeded the expected levels (range 11.3%-19.8%). With the late start to the 2015-16 influenza season, these above normal levels are not unexpected.

Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2015-16



In week 12, there were 2,882 positive influenza tests reported. To date, 81% of influenza detections have been influenza A and among those subtyped, the vast majority have been influenza A(H1N1) [91% (9630/10584]. The number of positive influenza B tests reported is accounting for an increasing proportion of all positive influenza tests reported; this week, influenza B positive tests accounted for 30% of all positive tests.

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province, Canada, 2015-16

Note: Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data include updates to previous weeks.

To date this season, detailed information on age and type/subtype has been received for 24,173 cases. Adults aged 20-44 years accounted for the greatest proportion of influenza cases, followed closely by adults aged 45-64 (Table 1).

Adults aged 20-44 and 45-64 years accounted for 55% of reported influenza A(H1N1) cases. Children 5-19 years and adults 20-44 years accounted for 57% of all influenza B cases reported.

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2015-16

Age groups (years)	Weekly (Mar. 20, 2016 to Mar. 26, 2016)					Cumulative (Aug. 30, 2015 to Mar. 26, 2016)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
<5	259	15	<5	x	112	3794	1564	62	2168	710	4511	19%
5-19	83	11	<5	x	148	2055	931	89	1035	1351	3417	14%
20-44	235	26	<5	x	122	4893	2404	138	2351	1146	6048	25%
45-64	303	38	<5	x	62	5172	2310	172	2690	521	5698	24%
65+	293	38	7	248	90	3827	1301	368	2158	667	4499	19%
Total	1173	128	15	1030	534	19741	8510	829	10402	4395	24173	100%
Percentage[2]	69%	11%	1%	88%	31%	82%	43%	4%	53%	18%		

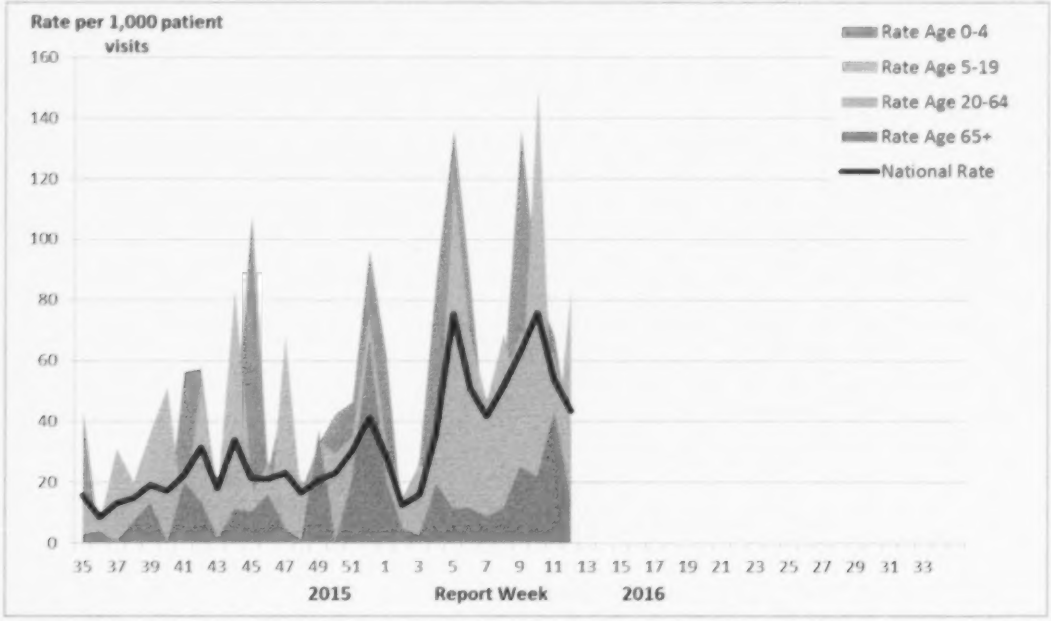
[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
x - Suppressed to prevent residual disclosure.

For data on other respiratory virus detections see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada website.

Influenza-like Illness Consultation Rate

The national ILI consultation rate decreased from the previous week from 53.6 per 1,000 patient visits in week 11, to 43.6 per 1,000 patient visits in week 12.The highest ILI consultation rate was found in the 5-19 years age group (84.2 per 1,000) and the lowest was found in the ≥65 years age group (14.7 per 1,000) (Figure 4).

Figure 4 – Influenza-like illness (ILI) consultation rates by age group and week, Canada, 2015-16

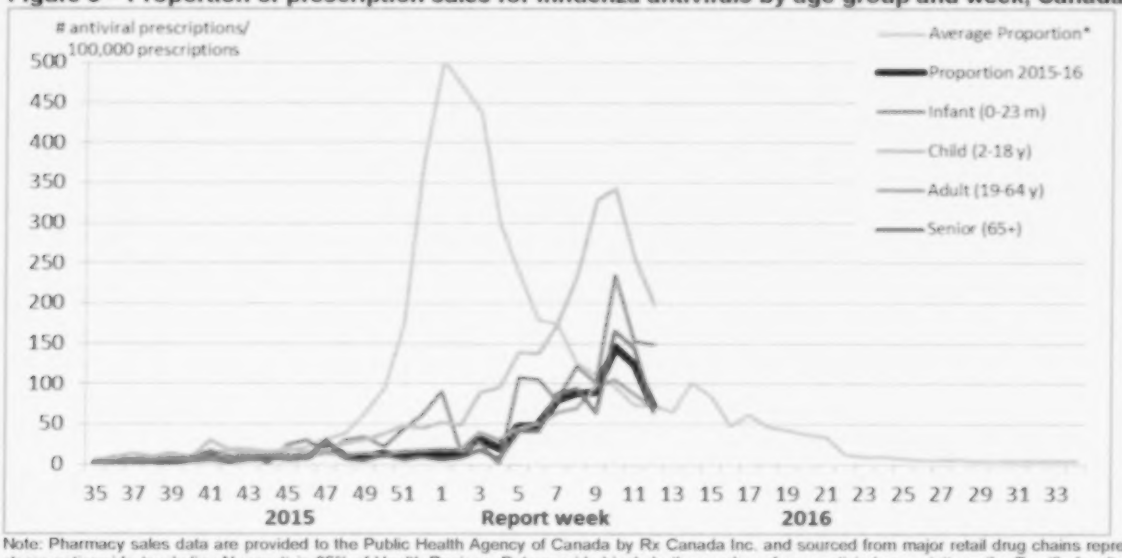


Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Pharmacy Surveillance

During week 12, the proportion of prescriptions for antivirals decreased to 72.9 antiviral prescriptions per 100,000 total prescriptions, which is slightly higher than the five year historical average for week 12. The proportion of prescriptions for antivirals remains highest among children. In week 12, the proportion reported among children was 199.3 per 100,000 total prescriptions.

Figure 5 – Proportion of prescription sales for influenza antivirals by age group and week, Canada, 2015-16



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu [oseltamivir] and Relenza [zanamivir]) and the total number of new prescriptions dispensed by Province/Territory and age group.

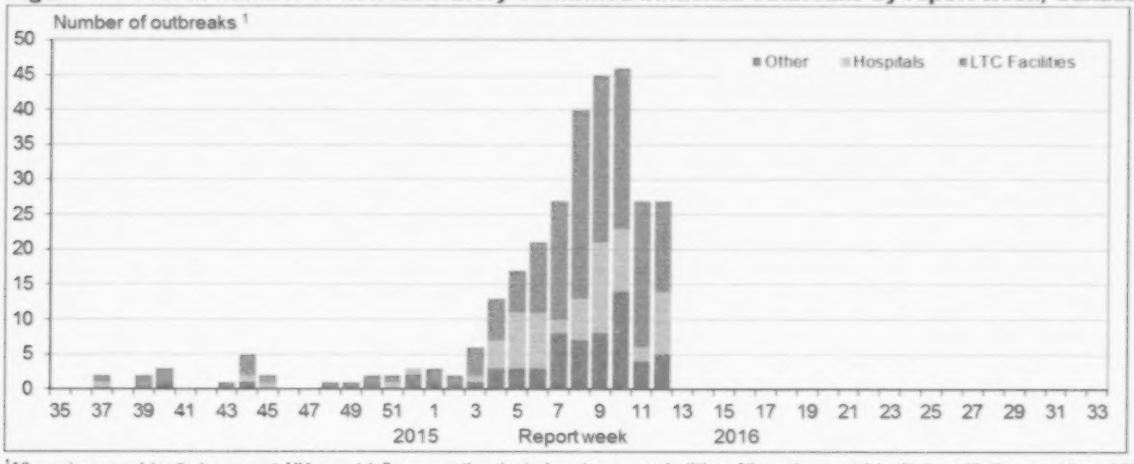
*The average weekly proportion includes data from April 2011 to March 2015.

Influenza Outbreak Surveillance

In week 12, 27 new laboratory confirmed influenza outbreaks were reported: 13 in long-term care facilities (LTCF), nine in hospitals and 5 in institutions or community settings. Of the outbreaks with known strains or subtypes, one outbreak was due to influenza B, three outbreaks were due to influenza A(H1N1) and three were due to influenza A(Uns). Additionally, one ILI outbreak was reported in a school.

To date this season, 330 outbreaks have been reported. At week 12 in the 2014-15 season, 1,587 outbreaks were reported and in the 2013-14 season,170 outbreaks were reported.

Figure 6 – Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2015-2016



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

In week 12, 85 hospitalizations were reported by the the Immunization Monitoring Program Active (IMPACT) network, a decrease from the previous three weeks (Figure 7). The largest proportion of hospitalizations were in children aged 5-9 years, accounting for 27% of the hospitalizations. The majority of hospitalizations were due to influenza A (65%).

To date this season, 1007 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations have been reported by the IMPACT network: 783 hospitalized cases were due to influenza A and 224 cases were due to influenza B. The greatest proportion of hosptalization cases were in children aged 6-23 months and children 2-4 years, each accounting for 28% of hospitalizations. To date, 169 intensive care unit (ICU) admissions have been reported. Children aged 2 to 4 and 5 to 9 years each accounted for 27% of ICU admissions. A total of 135 ICU cases (80%) reported to have at least one underlying condition or comorbidity. Seven influenza-associated deaths have been reported.

Table 2 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, Canada, 2015-16

Age Groups	Cumulative (Aug. 30, 2015 to Mar. 26, 2016)					
	Influenza A				Influenza B	Influenza A and B (#(%))
	A Total	A(H1) pdm09	A(H3)	A (UnS)	B Total	
0-5m	106	32	<5	x	17	123 (12%)
6-23m	233	69	7	157	49	282 (28%)
2-4y	226	75	<5	x	53	279 (28%)
5-9y	166	45	<5	x	73	239 (24%)
10-16y	52	18	<5	x	32	84 (8%)
Total	783	239	19	525	224	1007 (100%)

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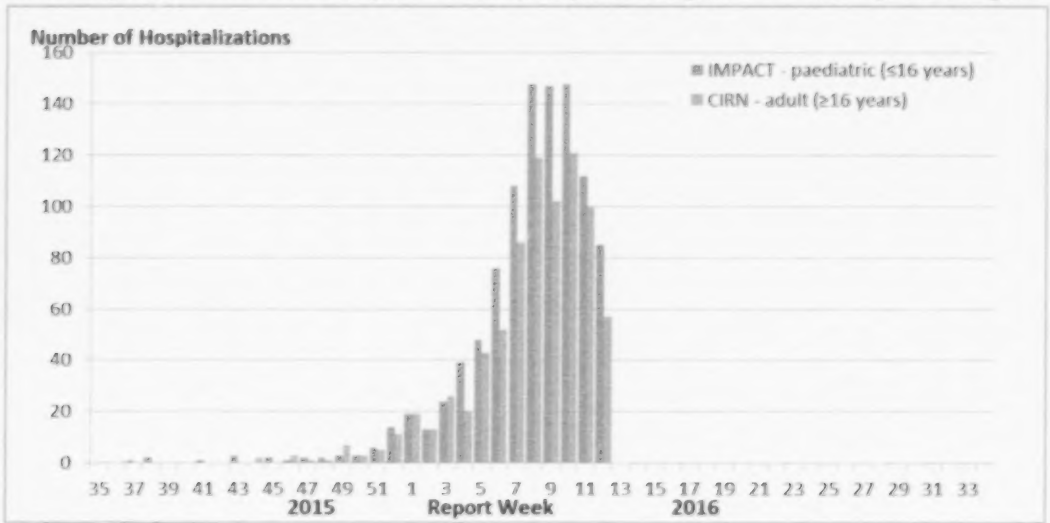
Figure 7 – Number of hospitalized cases of influenza reported by sentinel hospital networks, by week, Canada, 2015-16, pediatric and adult hospitalizations (≤16 years of age, IMPACT; ≥16 years of age, CIRN-SOS)



*Not included in Table 2 and Figure 6 are two IMPACT cases that were due to co-infections of influenza A and B.

Adult Influenza Hospitalizations and Deaths

In week 12, 57 hospitalizations were reported by the Canadian Immunization Research Network Serious Outcome Surveillance (CIRN-SOS) (Figure 7). The largest proportion of hospitalizations were in adults 65+ years of age (53%) and due to influenza A (81%).

To date this season, 791 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations have been reported by CIRN-SOS (Table 3). The majority of hospitalized cases were due to influenza A (86%) and the largest reported proportion were among adults ≥65 years of age (48%). One hundred and twelve intensive care unit (ICU) admissions have been reported and among those, 101 (90%) were due to influenza A. A total of 69 ICU cases (62%) reported to have at least one underlying condition or comorbidity. Twenty-seven deaths have been reported this season with the majority of deaths reported in adults ≥65 years of age (67%).

Table 3 – Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza reported by CIRN-SOS, Canada, 2015-16

Age groups (years)	Cumulative (Nov. 1, 2015 to Mar. 26 , 2016)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	<5	<5	0	<5	x	4 (1%)
20-44	106	33	<5	x	21	127 (16%)
45-64	245	69	<5	x	25	270 (34%)
65+	321	73	21	227	62	383 (48%)
Unknown	6	<5	0	<5	<5	7 (1%)
Total	682	182	25	475	109	791
%	86%	27%	4%	70%	14%	100%

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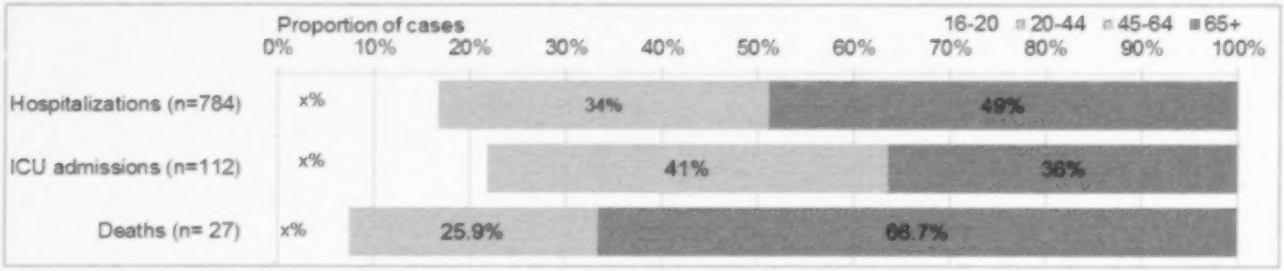
Figure 8 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group (≥16 year of age), CIRN-SOS, Canada 2015-16



Note: The number of hospitalizations reported through CIRN-SOS and IMPACT represents a subset of all influenza-associated adult and pediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

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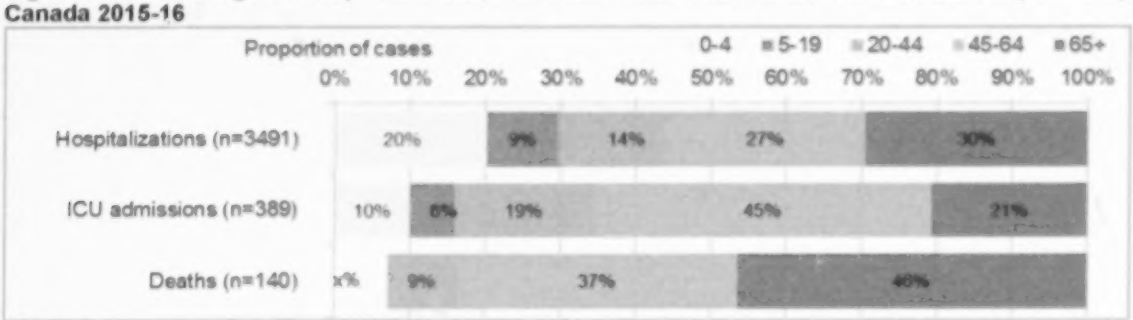
Provincial/Territorial Influenza Hospitalizations and Deaths

In week 12, 273 hospitalizations were reported from participating provinces and territories*. The majority of hospitalizations were due to influenza A (78%). The largest proportion of cases reported in week 12 were in adults 65+ years of age (31%).

Since the start of the 2015-16 season, 3,491 laboratory-confirmed influenza-associated hospitalizations have been reported. A total of 3,024 hospitalizations (87%) were due to influenza A and 467 (13%) were due to influenza B. Among cases for which the subtype of influenza A was reported, 93% (1442/1554) were influenza A(H1N1). The largest proportion (30%) of hospitalized cases were ≥65 years of age, followed closely by adults 45-64 years of age (27%). Three hundred and eighty nine ICU admissions have been reported of which 225 (58%) were due to influenza A(H1N1) and 175 (45%) were in the 45-64 age group. A total of 140 deaths have been reported; all but 10 were associated with influenza A. Adults ≥65 years of age each represented 46% of reported deaths.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group, Canada 2015-16



* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. Data may also include cases reported by the IMPACT and CIRN-SOS networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from ON that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

x - Suppressed to prevent residual disclosure

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2011-12 to 2015-16 on the Public Health Agency of Canada website.

Influenza Strain Characterizations

During the 2015-16 influenza season, the National Microbiology Laboratory (NML) has characterized 1312 influenza viruses [149 A(H3N2), 775 A(H1N1) and 388 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assays, 35 H3N2 virus were antigenically characterized as A/Switzerland/9715293/2013-like using antiserum raised against cell-propagated A/Switzerland/9715293/2013.

Sequence analysis was done on 114 H3N2 viruses. All viruses belonged to a genetic group for which most viruses were antigenically related to A/Switzerland/9715293/2013. A/Switzerland/9715293/2013 is the A(H3N2) component of the 2015-16 Northern Hemisphere's vaccine.

Influenza A (H1N1): A total of 775 H1N1 viruses characterized were antigenically similar to A/California/7/2009, the A(H1N1) component of the 2015-16 influenza vaccine.

Influenza B: A total of 104 influenza B viruses characterized were antigenically similar to the vaccine strain B/Phuket/3073/2013. A total of 284 influenza B viruses were characterized as B/Brisbane/60/2008-like, one of the influenza B components of the 2015-16 Northern Hemisphere quadrivalent influenza vaccine.

The recommended components for the 2015-2016 Northern Hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Switzerland/9715293/2013(H3N2)-like virus, and a B/Phuket/3073/2013 -like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus (Victoria lineage) is recommended.
The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition testing compared to the reference influenza strains recommended by WHO.

Antiviral Resistance

During the 2015-16 season, the National Microbiology Laboratory (NML) has tested 904 influenza viruses for resistance to oseltamivir, 826 for resistance to zanamivir and 940 influenza viruses for resistance to amantadine. All but seven tested viruses were sensitive to oseltamivir. The seven H1N1 viruses resistant to oseltamivir had a H275Y mutation. All viruses tested for resistance were sensitive to zanamivir. All but one influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2015-16

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	137	0	134	0	160	159 (99.4%)
A (H1N1)	545	7	479	0	780	780 (100%)
B	222	0	213	0	NA[1]	NA[1]
TOTAL	904	7	826	0	940	939

[1]NA: Not Applicable

International Influenza Reports

World Health Organization influenza update
World Health Organization FluNet
WHO Influenza at the human-animal interface
Centers for Disease Control and Prevention seasonal influenza report
European Centre for Disease Prevention and Control - epidemiological data
South Africa Influenza surveillance report
New Zealand Public Health Surveillance
Australia Influenza Report
Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2015-2016 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.
Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.
Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported.
2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†
3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region†**
4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region†**

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.
** More than just sporadic as determined by the provincial/territorial epidemiologist.*
† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.
This report is available on the Government of Canada Influenza webpage under Weekly influenza reports.
Ce rapport est disponible dans les deux langues officielles.